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ABSTRACT

This report describes the various energy education programs and projects with which the Iowa Energy Policy Council has been involved since 1976. Briefly summarized are the Council's activities in curriculum development, inservice education, energy extension, and the organization of energy-related special events. (WB)

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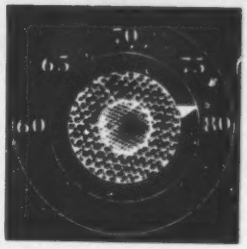

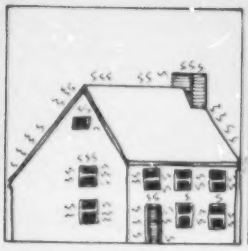

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ACTIVITIES OF THE IOWA ENERGY POLICY COUNCIL IN ENERGY EDUCATION

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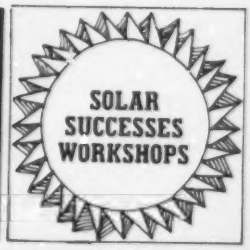

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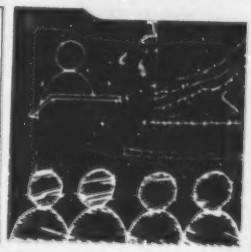

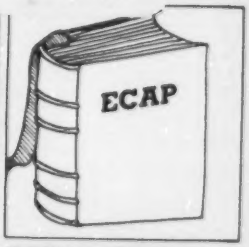

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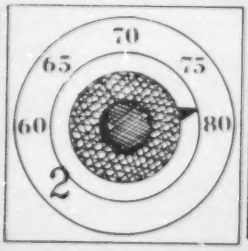

ACTIVITIES OF THE IOWA ENERGY POLICY COUNCIL IN ENERGY EDUCATION

Prepared by
W. Tony Heiting, Ph.D.

June 1980

Iowa Energy Policy Council
Capitol Complex
Des Moines, Iowa 50319

"It appears to have gotten to the heads of nearly everyone now that there is indeed an energy problem. Some say crisis. The young people of today are going to be the ones who must solve it — at very least to maintain the kind of life they've been brought up to know; at most to insure survival."

Teacher Supplement
to Energy Conservation,
New Mexico State Department
of Education, 1977

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National Energy Education Day

By the President of the United States of America

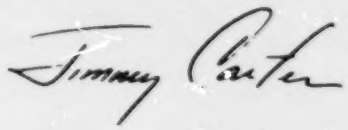
A Proclamation

During the past decade it has become clear that our Nation faces an increasing shortage of its traditional energy sources. This energy shortage and our growing dependence on foreign energy supplies present a serious threat to the national security of the United States and to the health, safety and welfare of its citizens. In an effort to reduce our dependence on foreign energy, we have embarked on a number of programs aimed at the development of new energy technologies. We have also initiated a comprehensive program to educate the Nation, particularly the Nation's youth, about the consequences of the changing world energy supply.

In order to focus our attention on this ongoing program of energy education for the young—in both public and private schools and at all grade levels—and in an effort to bring together teachers, school officials and parent groups to help our children understand the current international energy situation, Congress has by Joint Resolution (S.J. Res. 43) proclaimed March 21, 1980, as National Energy Education Day.

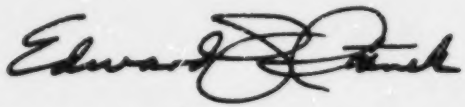
NOW, THEREFORE, I, JIMMY CARTER, President of the United States of America, do hereby call upon all citizens and government officials to observe Friday, March 21, 1980, as National Energy Education Day with appropriate ceremonies and activities. I direct all agencies of the Federal Government to cooperate with and participate in the celebration of National Energy Education Day.

IN WITNESS WHEREOF, I have hereunto set my hand this twentieth day of March, in the year of our Lord nineteen hundred and eighty, and of the Independence of the United States of America the two hundred and fourth.



PREFACE

The purpose of this report is to describe the various energy education programs the Iowa Energy Policy Council has administered and/or been directly involved in for our Iowa schools. This report will help answer some of the many questions raised by the public as to what the state government and the Iowa Energy Policy Council in particular, have done and are doing to prepare educators and students to meet the energy challenges of the present and future.



Edward J. Stanek
Director of Energy Policy

INTRODUCTION

One of the most important problems in this nation's future is energy. Energy influences all facets of our life. In 1973 our nation first became aware of our dependence on foreign oil during the Arab oil embargo. The national life style had developed based on abundant, inexpensive supplies of energy, primarily oil and gas.

After the embargo, we began to reassess our value system and way of life in light of more expensive and limited supplies of energy. When gas and oil once again began to flow freely, we tended to return to our energy-centered way of life. Only in the past year, as energy costs have risen rapidly, has the general public again seriously evaluated its life-style.

Recent energy attitude and knowledge studies [National Assessment of Educational Progress (NAEP), Education Commission of the States (ECS)] revealed a concerned and receptive, but not deeply knowledgeable public. These studies further indicate our citizen-decision makers do not have a grasp of the basic facts that will allow them to make informed and rational choices between the optional paths toward our energy future.

These studies also indicate a strong need for public education, as the tested groups are beyond the reach of our school system. Public education programs have been widely initiated and developed at the federal and state levels. Examples of such programs sponsored by the Iowa Energy Policy Council include the Iowa Energy Bulletin, energy consumer publications, the Iowa Farm Fuel Report, solar publications, a speakers' bureau and the state conservation and energy extension service programs. The majority of these public education activities are directed toward the adult population, but there is also a mighty task for formal education.

This nation is in a period of transition from a time of inexpensive abundant energy to a future in which energy will be expensive and perhaps quite different in form from the fossil fuels we now burn. The time of transition will be measured in decades, not years. There is time, therefore, to mount extensive educational programs in our schools to prepare citizens for the decision-making that will guide this transition. It is the young people of today who are going to be the ones to solve many of the energy issues and problems that will face us during this transitional period.

The Honorable Robert D. Ray, Governor of the State of Iowa, proclaimed an Energy Awareness Week in December of 1973. It was

recommended that each school conscientiously carry out an educational program involving study, demonstrations, experiences and discussions of the importance of energy and its conservation. This Energy Awareness Week served as a prelude for many schools in Iowa to deal with the energy problem. It was suggested at that time that additional energy information should become available from the Department of Public Instruction (DPI). This suggestion resulted in the development of an "energy materials" resource guide (1974) by the DPI that was disseminated to each elementary and secondary school in Iowa. This marked the beginning of a formal approach at the state level in assisting teachers to help students understand our energy problems.

However, the emphasis in this direction at the state and national level seemed to dissipate as our country returned to its energy-centered way of life soon after the uplifting of the embargo on the United States by the Arab nations. A review of energy education literature shows that in a very short time after the announced oil embargo of 1973-74, lots of written material for teachers and schools had been produced on the energy shortage and was in circulation during 1974 and 1975. But, after 1975, very few energy education publications were being developed for schools as the public seemed to forget the consequences of a foreign oil embargo.

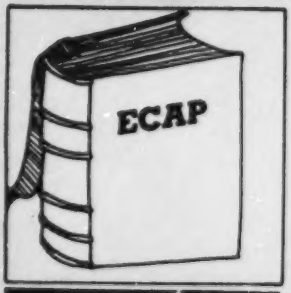
The Iowa Energy Policy Council, realizing the need and importance to continue energy education in the schools, began an extensive involvement in 1976 initiating and developing energy education activities for use in our Iowa schools.

OVERVIEW

There are four major areas in which the Iowa Energy Policy Council has played a significant role in supporting and coordinating energy education related programs in Iowa schools. These areas are:

(A) Curriculum development,
(B) Training,
(C) Energy education special events, and
(D) the Energy Extension Service.

CURRICULUM DEVELOPMENT



The Iowa Energy Policy Council's Research and Development (R & D) Program created in 1974 has funded a number of energy education projects. The first of these projects was the development of a mini-curriculum titled **Energy Conservation in the Home** completed in October of 1977. This program was offered as an adult education short course with the primary emphasis on insulation techniques for new and existing homes. The course was offered to the public through the Area I Adult Education Program as a five-week, one-night-a-week, course.

A second program funded by the EPC R & D program is titled **An Inquiry Approach to Energy Issues.** The objective of this program, started in 1977, was to conduct a search and prepare an annotated bibliography (filmography) of current audiovisual material, dealing with energy and energy problems targeted to the Junior High audience. Over 300 films were viewed and classified. The second stage of this project (the production phase) will proceed if federal funding becomes available.

In November of 1977 the EPC R & D program funded a proposal titled **The Scott Community College Solar Energetics Technician Project.** This program resulted in the development of a comprehensive two-year solar energy curriculum. The Scott Community College solar curriculum implemented in February of 1978 offers: (1) a five quarter solar domestic elective, (2) a six quarter solar industrial elective, or (3) an eight quarter solar energetics technology major.

In an effort to improve energy education for grades K-6, the Iowa Energy Policy Council, in conjunction with the Department of Public Instruction (DPI), developed in 1978 the **Energy Conservation Activity Packets** (ECAPs). ECAPs contain a variety of interdisciplinary activities, accompanying worksheets, visuals, and annotated child and teacher bibliographies for grades K-6. The ECAP packets correlate energy and environmental education with materials housed in separate three-ring binders according to grade level. ECAPs are unique because they are designed to aid teachers in encouraging development of a conservation ethic within students while simultaneously clarifying student values.

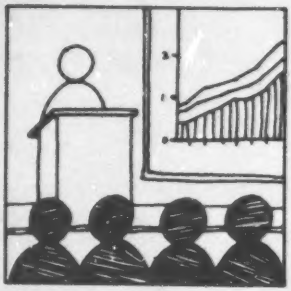
The Energy Conservation Activity Packets have been in use throughout Iowa's public schools. The EPC and the DPI felt there was a need to evaluate the curriculum to determine whether or not it is fulfilling the objectives. This resulted in an EPC grant for the **Evaluation of the Energy Conservation Activity Packets** in December of 1978. The evaluation recommended many constructive revisions and it is the intention of the EPC and DPI to make the necessary changes in the ECAP material to update it to the needs of both the teachers and students.

In an effort to extend energy education beyond grade six, the Iowa Energy Policy Council contracted for the **Development of Energy Education Curricula for Iowa Secondary Schools** in October of 1978. A needs assessment survey conducted by the Department of Public Instruction regarding energy materials in Iowa schools was a source of guidance on the informational needs of Iowa secondary teachers. The strong response of science, social studies, industrial arts, and home economics teachers in secondary schools prompted the attempt to provide multidisciplinary and interdisciplinary activities. The completed 750-page manuscript includes 26 articles written explicitly for teachers' background information; 37 student-centered activities; 49 teacher-directed activities as well as annotated, selected bibliographies of energy-related multimedia that may be useful to Iowa teachers. This secondary energy curriculum is presently being reviewed and pilot tested in Iowa secondary schools.

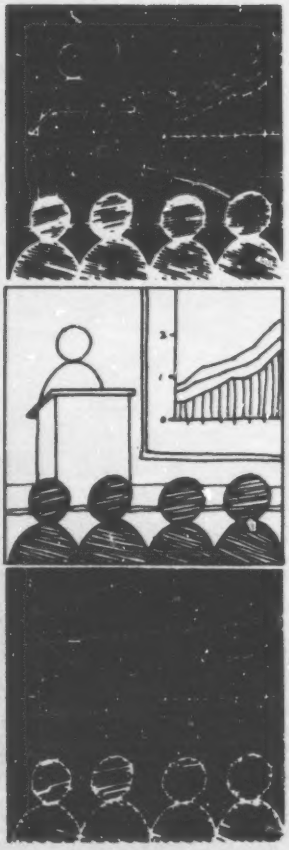
The Iowa Energy Policy Council is awaiting federal funding approval for the development of a **Driver Education Curriculum.** It is proposed that this curriculum will include activities that teach energy conservation driving techniques, maintenance, vehicle selection and other driver energy conservation measures that impact energy use. This program will be coordinated with the Department of Public Instruction and Iowa's schools.

The Iowa Energy Policy Council is participating in the **Development of 4-H Energy Conservation Materials for Junior High School Youth.** This is a cooperative project with the energy offices and the 4-H/youth development departments in Iowa, Nebraska and Missouri. The project will produce energy learning modules designed to supplement energy information for schools and 4-H clubs. The learning modules will consist of four 28-minute video-cassettes for educational television, leader/teacher guides and a promotional program. Learning guides will contain objectives of the video-cassettes, and energy information as outlined in the content areas. The program will also suggest one or more involvement activities each as group discussions, games, mini-surveys and community activities. This energy education project started in February of 1978 and will be completed in the summer of 1980.

In 1979 the Energy Policy Council submitted a proposal to the Department of Energy for an **Iowa Project Passive** program for Iowa building trade schools. The specific purpose of this program is to identify and develop information which will effectively introduce Iowa-specific passive designs and construction to Iowa building trade school programs. This project did receive funding from DOE and will result in the development of a curriculum packet which can be effectively adapted into presently used curriculum materials within Iowa schools building trade programs.



TRAINING



It is imperative that new curriculum materials be pilot tested to determine and insure their applicability to the target audiences. During the developmental stages and after the final writing of the Energy Conservation Activity Packets (ECAPs), the **ECAP Pilot Testing Program** was initiated. The pilot testing team went into the schools with selected activities and took over each class for the full class period and conducted it as the teacher (essentially providing a model for the teacher in use of the packets). In arranging for these field tests, the team tried to test all grade levels an equal number of times. After each classroom test, the team discussed with the teacher how the session had gone and his/her reactions to the content and impact.

ECAP Teacher Training Workshops have been held throughout Iowa commencing in 1978. These workshops were conducted for Area Education Agency consultants, school administrators and Iowa teachers. The ECAPs were available to Iowa teachers only through inservice because it was felt that teachers need direct training exposure to the ECAPs if they were to be effectively implemented. The primary purpose for use of the inservice process was to broaden the teachers' perspectives and sensitize them to a greater energy awareness. The method utilized was experiential and activity-oriented rather than information-oriented, and proved successful in achieving active participation at all workshops. The Department of Public Instruction who coordinated and conducted these workshops estimates that 5,000 Iowa teachers have been directly inserviced on the ECAP material representing roughly 35 percent of Iowa's elementary school teachers.

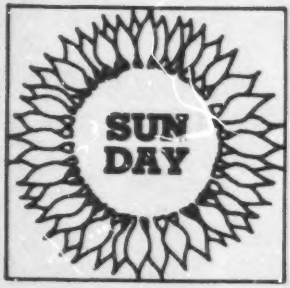
The Iowa Energy Policy Council in January 1980 contracted with the Department of Public Instruction for the **Pilot Testing and Printing of EPC Secondary Education Materials.** This project involves the selection of secondary schools for pilot testing EPC secondary energy education materials, developing evaluation instruments for use by teachers in the pilot schools, evaluating data collected in the instruments, editing, packaging and printing of a final product. It is anticipated that this work will be completed in September of 1980.

Once the EPC Secondary Energy Education materials are pilot-tested and printed, the EPC will provide support for the **Implementation of EPC Secondary Energy Education Curriculum** in Iowa's schools. This curriculum will be distributed to Area Education Agencies (AEAs) through training workshops. Curriculum workshops,

in-service classroom activities and demonstrations and educational media will be enlisted to bring this curriculum to Iowa's secondary teachers and students. This implementation program will begin in October 1980 and will include the secondary energy materials in the curriculum Energy and Man's Environment (EME) as well as other pertinent curriculum materials that are on-line at this time.

The Energy Policy Council and the Department of Public Instruction will be participating in an energy curriculum implementation program in Iowa titled **Energy and Man's Environment** (EME). The EME materials prepared for all disciplines and grade levels focus on six topic areas: energy sources, energy uses, environmental impact, energy conversion, energy limits, and future energy sources. The developers of the EME materials have received a grant from an Iowa utility to hold workshops in Iowa introducing the energy concepts in their programs. These workshops will be held in 1980 and coordinated and integrated with the EPC-DPI secondary energy education implementation workshops to be held in the fall and winter of 1980.

The Energy Policy Council has developed a rather extensive **Energy Education Resource Library** for in-house training and use by Iowa teachers and students. The EPC Energy Education Coordinator is available for consultation with Iowa teachers and students in integrating these materials into their present curriculum and school activities. The Department of Public Instruction, in addition, has a more comprehensive energy education library in specific energy education curriculums developed which are available for review by Iowa teachers and schools.



EDUCATIONAL SPECIAL EVENTS

The Energy Policy Council sponsors, administers, coordinates and participates in a number of educational special events for Iowa's teachers, students and schools, as well as the general public.

The EPC in 1978 established a **Public Speakers Bureau.** The speakers' bureau is made up of EPC staff and Council members and people in Iowa knowledgable in the energy field. Members of this bureau often are requested to speak at Iowa school activities and to individual teacher's classes on energy issues and programs.

In 1978 and 1979, the EPC sponsored a series of **Solar Successes Workshops** at Iowa's community colleges. The purpose of these workshops was to make practical information on solar and conservation technologies available to Iowa community college faculty and students as well as the general public. These workshops will continue and will be explained in more detail below.

In 1978 and 1979 the EPC sponsored Iowa's **SUN DAYs.** Iowa's first SUN DAY was celebrated on May 3, 1978, and the following year on June 21, 1979. SUN DAY has been an annual event and is celebrated to emphasize the use of the sun as an inexhaustible, non-polluting free source of energy. The EPC, working with the Department of Public Instruction, solicits the involvement of Iowa's teachers and students in planning classroom and school activities on SUN DAY. This year this annual event was celebrated on April 22. The EPC has available specific ideas and activities for teacher use on SUN DAY.

During the past three years, members of the EPC staff have been involved in the instruction of an **Adult Education Solar Energy Course** offered by the Des Moines Public School System. Much interest has been generated in adult education for solar energy instruction. The EPC will continue to be actively involved in this effort.

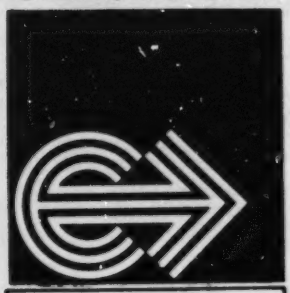
In May of 1979 the EPC coordinated the **Great Iowa Cleanup** to rid the state's roads, parks and riverbanks of litter, cans and other trash. This effort drew some 45,000 volunteers which included participation by many of our Iowa teachers and students.

During the past years many conferences, seminars and workshops have been held throughout the country in the area of energy education. One of the more notable conferences is the annual **National Association of Science Teachers Convention.** This convention brings together some 5,000 science teachers at all academic levels for presentations and participation in new science curriculum developments and programs. Many of the workshops held are in the area of energy education. EPC staff members have

attended and participated in such conferences sharing with others what is being done in energy education in Iowa and bringing back new ideas and curriculums developed in other states. The EPC will continue to be represented at such meetings to keep Iowa well informed of the latest developments in energy education.

The American Association of Community and Junior Colleges, the National Endowment for the Humanities and the Department of Energy are promoting a **National Issues Forum on Energy and the Way We Live** in 1980-81. The forums in Iowa will take place at our community colleges and will be co-sponsored by the EPC. The forums are designed to air public concerns regarding energy and how it will affect their lives, as well as to provide the public with opportunities to discuss public energy policy choices. Teachers and students at the hosting community colleges will be asked to actively participate in these forums.

ENERGY EXTENSION SERVICE (EES)



The national Energy Extension Service (EES) will be a federal/state partnership to give personalized information and technical assistance on energy conservation. Every state will receive grants in the next few months to work with individuals, owners of small companies and local government officials to help them take practical steps in saving energy and switching to renewable energy resources. Iowa's Energy Extension Service (IEES) proposal was submitted to DOE in February of 1980 and approved April 25, 1980. The overall objectives of the IEES are to: (1) Provide positive outreach programs that increase the capability of small energy users to make informed energy choices, and (2) Provide services that compliment rather than duplicate existing energy conservation efforts in the state.

The IEES proposal includes eight programs for which funding is requested over a three-year period from DOE. These programs are:

(1) Information dissemination and energy workshops for small retail/manufacturing firms;
(2) Agricultural outreach program;
(3) Solar/conservation workshops;
(4) Home audit program;
(5) Establishment of an energy hotline/data bank;
(6) Media spots program;
(7) Youth, teachers/leaders program, and
(8) Designers and builders workshops.

Although all the eight programs are focused on public education, two of the programs relate specifically to teachers, students and schools. The first of these programs is the **Solar/Conservation Workshops.** These workshops, previously mentioned in the training section of this report, will be expanded in the IEES program to involve most of Iowa's area community colleges over the next three years. A local committee for planning will be formed at each community college to organize and administer the solar/conservation workshops aimed at putting people in contact with solar and conservation designers and builders.

The second IEES program titled **Youth, Teachers/Leaders,** is for youth leaders and teachers in Iowa who have indicated that interest in energy is increasing in students, but that leaders need the tools to build a meaningful conservation ethic in students. The program will offer inservice to two types of youth influencers: elementary teachers and leaders of youth groups, (i.e., 4-H, Boy Scouts, etc.). The program will also develop an incentive method to encourage teachers/leaders to utilize the inservice training and to give recog-

nition to the youth and teachers/leaders who have made either a group or individual commitment to energy conservation. Task projects and hands-on experiences with conservation and solar technologies will be emphasized.

SUMMARY

This report has described the activities of the Iowa Energy Policy Council in energy education. Since 1976 the EPC has taken an active involvement in instituting, developing and administering energy education programs in Iowa. The EPC works closely with the Iowa Department of Public Instruction which serves as the vehicle in the implementation of most of these programs.

The EPC will continue to support energy education activities in Iowa's schools. The EPC believes that it is time for a systematic integration of energy education into the K-12 and post secondary curriculums; that energy education should be interdisciplinary; should relate to the everyday life of students; should consider attitudes, values, and decision making; and should be future-oriented and stress alternatives. The EPC has attempted to stress these elements in its energy education activities and will continue to do so in hopes of preparing teachers and students to deal with the many critical energy issues that are of great concern and importance to us today.